

REMARKS

In the Office Action of October 19, 2007, the Examiner confirmed that the former 102(e) and 103(a) rejections based on Conrad et al. have been overcome by Applicants' Rule 131 declaration.

Claims 7 and 8 were objected to for the use of the phrase "first advanced cleaning cycle" rather than "first advanced solvent refining cycle." Claim 8 has been canceled and claim 7 has been amended to use the proper phrase.

Claims 10 and 11 were objected to for the use of the phrase "second advanced cleaning cycle" rather than "second advanced solvent refining cycle." Claims 10 and 11 have been amended to use the proper phrase.

Claim 7 was rejected under section 112 for use of the phrase "first replenishable means" without sufficient antecedent basis. Claim 7 has been amended to defining a step of employing a first replenishable means in the first advanced solvent refining cycle.

Claim 10 was rejected under section 112 for use of the phrase "second replenishable means" without sufficient antecedent basis. Claim 10 has been amended to defining a step of employing a second replenishable means in the second advanced solvent refining cycle.

Applicants respectfully submit that the amendments to the claims address each of the 112 objections and rejections made by the Examiner.

Claims 1, 6-10, 14 and 15 were rejected under section 102(b) as being anticipated by Estes et al. (Estes). Claim 3 was rejected under section 103(a) as being unpatentable over Estes. Claims 11 and 12 were rejected under section 103(a) as being unpatentable over Estes in view of Berndt et al. (Berndt). Claim 13 was rejected under section 103(a) as being unpatentable over Estes and Berndt. Claims 4, 5, 16 and 19 were rejected under section 103(a) as being unpatentable over Estes in view of Berndt.

Independent claim 1 has been amended to more clearly and specifically define the claimed process in which the basic solvent refining cycle separates the solvent into a first solvent fraction and a second solvent fraction by first reducing a temperature of the solvent below 0 degrees C and then passing the cooled solvent through a cross-flow membrane filter. The Estes disclosure does not teach or suggest cooling the solvent prior to filtering, and certainly does not teach or suggest cooling the solvent to a temperature below 0 degrees C prior to filtering. For this reason alone, Estes does not anticipate or render obvious claim 1 or any of its dependent claims.

Further, claim 1 has been amended to define that the first advanced solvent refining cycle comprises a step of low temperature evaporation of the second solvent fraction at a temperature at least 30 degrees F below a flash point of the solvent, and then condensing the evaporated second solvent fraction and delivering it to a clean solvent storage container. The Estes disclosure does not teach or suggest utilizing a low temperature evaporation process for refining the solvent at a temperature at least 30 degrees F below a flash point of the solvent. What Estes teaches is to dewater a detergent/water wash liquid by introducing an ideal working fluid (IWF) and a hydrophilic solvent, and then increasing the temperature of the mixture to the hydrophilic boiling point to remove the solvent. While Estes does not disclose any particular hydrophilic solvent, ethanol, which is a hydrophilic solvent, demonstrates the teaching of Estes as compared to the requirements of amended claim 1. The boiling point of ethanol is 78.3 degrees C, while the flash point of ethanol is 12 degrees C. Thus, Estes specifically teaches to raise the temperature of the solvent mixture well above the flash point temperature of the solvent, rather than keeping it well below the flash point temperature as required by claim 1. For this additional reason, applicants submit that Estes does not anticipate nor render obvious claim 1 or any of its dependent claims. Rather, Estes teaches away from the specific requirements of claim 1.

Estes also does not teach or suggest the use of a cross-flow membrane filter as required by claim 1. For this reason, the Examiner turned to the teaching of Berndt, which merely suggests general filtering during the washing process. In any event, Berndt does not teach or suggest the cooling step nor the low temperature evaporation step, so even a combination of the teachings of Estes with Berndt would not render claim 1 obvious.

Therefore, applicants respectfully submit that claim 1 and each of its dependent claims are patentable over the references relied on by the Examiner.

Independent claim 19 has been amended to more clearly and specifically define the claimed invention. Specifically, claim 19 requires that the first predetermined condition (for initiating the solvent cleaning process) occurs when the solvent fulfills a first predetermined condition other than initiation or completion of a single wash cycle. Estes teaches to provide a cleaning of the solvent during or at the end of each wash cycle, and therefore, Estes does not anticipate claim 19. Berndt also teaches to clean the solvent during each wash cycle, and therefore, a combination of Estes and Berndt would not render the process of claim 19, or any of its dependent claims, obvious.

Further, claim 19 defines the basic solvent refining cycles as comprising the steps of first cooling a temperature of the solvent below 0 degrees C and then filtering the solvent in a cross-flow microfiltration membrane. The Estes disclosure does not teach or suggest cooling the solvent prior to filtering, and certainly does not teach or suggest cooling the solvent to a temperature below 0 degrees C prior to filtering. Berndt does not teach or suggest the cooling step nor the low temperature evaporation step, so even a combination of the teachings of Estes with Berndt would not render claim 19, or any of its dependent claims, obvious.

New independent claim 20 defines a solvent cleaning process which occurs when the solvent fulfills a first predetermined condition other than initiation or completion of a single wash cycle. Estes teaches to provide a cleaning of the solvent during or at the end of each wash cycle, and therefore, Estes does not anticipate claim 20. Berndt also teaches to clean the solvent during each wash cycle, and therefore, a combination of Estes and Berndt would not render the process of claim 20 obvious.

Further, claim 20 defines a first advanced solvent refining cycle comprising a step of low temperature evaporation of the second solvent fraction at a temperature at least 30 degrees F below a flash point of the solvent, and then condensing the evaporated second solvent fraction and delivering it to a clean solvent storage container. The Estes disclosure does not teach or suggest utilizing a low temperature evaporation process for refining the solvent at a temperature at least 30 degrees F below a flash point of the solvent. What Estes teaches is to dewater a detergent/water wash liquid by introducing an ideal working fluid (IWF) and a hydrophilic solvent, and then increasing the temperature of the mixture to the hydrophilic boiling point to remove the solvent. While Estes does not disclose any particular hydrophilic solvent, ethanol, which is a hydrophilic solvent, demonstrates the teaching of Estes as compared to the requirements of new claim 20. The boiling point of ethanol is 78.3 degrees C, while the flash point of ethanol is 12 degrees C. Thus, Estes specifically teaches to raise the temperature of the solvent mixture well above the flash point temperature of the solvent, rather than keeping it well below the flash point temperature as required by claim 20. For this additional reason, applicants submit that Estes does not anticipate nor render obvious claim 20. Rather, Estes teaches away from the specific requirements of claim 20. Berndt does not teach or suggest a low temperature evaporation step, so even a combination of Estes and Berndt would not render the process of claim 20 obvious.

In view of the foregoing amendments and remarks, applicants respectfully submit that all of the claims are in compliance with section 112 and are patentably distinguishable over the references relied on by the Examiner, singly and in combination. Therefore, applicants request the Examiner to withdraw the objections and rejections and pass the case to issue.

Should the Examiner discover there are remaining issues which may be resolved by a telephone interview, she is invited to contact applicants' undersigned attorney at 312-987-2917.

Applicants look forward to receiving a Notice of Allowance of all of the claims remaining in the application.

Respectfully submitted,

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